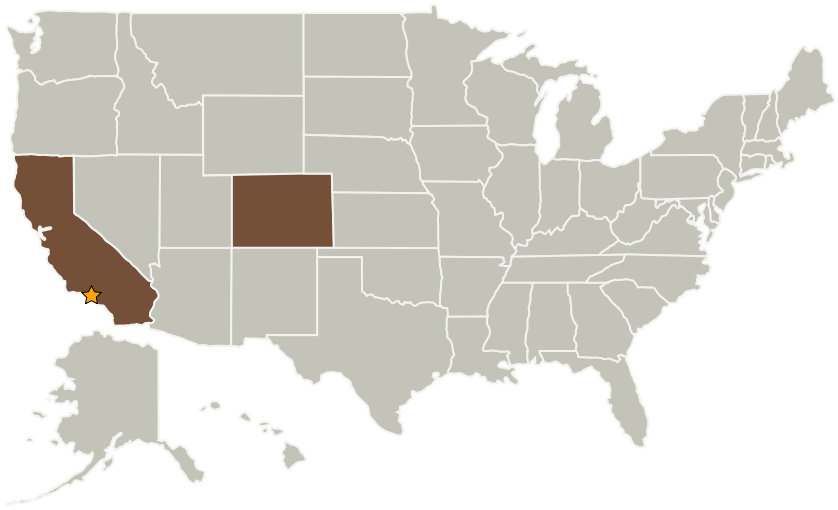
Advanced Pumps and Cold Plates for Two-Phase Cooling Loops, Phase II

Completed Technology Project (2005 - 2007)

Project Introduction

Advanced instruments used for earth science missions require improved cooling systems to remove heat from high power electronic components and maintain tight temperature control for sensitive instruments. Mesoscopic Devices proposes to develop a pumped two-phase cooling loop that will provide high heat flux, distributed load cooling (> 100 W/cm^2) in a lightweight system. In Phase I, an extremely compact pump optimized for two phase cooling was demonstrated, along with advanced lightweight cold plates. Pump and cold plate advances in Phase II will further reduce the mass and improve reliability. A complete thermal loop will be constructed and tested to demonstrate the improved pumps and cold plates.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Mesoscopic Devices LLC	Supporting Organization	Industry	Broomfield, Colorado

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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California	Colorado

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.2 Thermal Control Components and Systems
    - TX14.2.1 Heat Acquisition